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| EXAMINER | |
|---|---|
| RO, YONG-SUK | |

| ART UNIT | PAPER NUMBER |
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| 3676 | |

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

| Office Action Summary | Application No. | Applicant(s) | |
|---|---|---|---|
| | 10/574,998 | MEDDES ET AL. | |
| | Examiner | Art Unit | |
| | Yong-Suk Ro | 3676 | |

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on *30 June 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *1-15* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *07 April 2006* is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 4-5, 7-8, and 13-15 are rejected under 35 U.S.C. 102(b) as being anticipated by Brieger (4756371).

Brieger discloses a similar device, comprising:

Re claim 1:

- A carrier T/60 for at least one shaped charge $S_H$, $S_A$ (Col. 6:40, 46-48, Fig. 5).
- The carrier being disposable in use within a well bore 11.
- The carrier comprising a housing 60 at least partially formed from a composite material, the composite material being non-frangible in normal use (Col. 6:43, Figs. 5, 6). It is noted that the steel is composite material consisting of iron with carbon, and non-frangible. Fig. 6 depicts the housing 60 remains intact after firing of shaped charge.
- The composite material being arranged substantially to contain debris 72 created within the carrier T as a result of firing of the at least one shaped charge (Fig. 6, Col. 6:42-45, 58-62).

Re claim 4:

- The housing 60 is a composite material housing (Col. 6:43). It is noted that the steel is composite material consisting of iron with carbon.

Re claim 5:

- The housing comprises a thin-walled cylinder 62 (Fig. 5).

Re claim 7:

- the carrier T/60 has at least one port $68_A$, $68_H$ formed therein (Fig. 5)

Re claim 8:

- A plurality of ports are distributed along the longitudinal extent of the carrier. (Fig. 5).

Re claim 13:

- A perforating gun T comprising a carrier 60 (Fig. 5).

Brieger discloses a similar method, comprising:

Re claim 14:

- Providing a perforating gun T (Fig. 5).
- Positioning the perforating gun T in the well borehole 11 (Fig. 5).
- Perforating the borehole by firing the perforating gun (Fig. 6).
- Retrieving debris 72 resulting from the step of perforating by recovering the carrier 60 of the perforating gun T (Fig. 6), the carrier T/60 containing debris resulting from the firing (Col. 6:42-45, 58-62).

Re claim 15:

- The fluid is one or more of hydrocarbons, water, and steam (Col. 3:64-65).

***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2-3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brieger (4756371) in view of Xu et al. (6422148).

Re claim 2: Brieger discloses the housing 60 comprises an inner housing 62.

However, Brieger fails to disclose an inner housing which is at least partially encompassed by an outer composite material overwrap.

Xu et al. disclose the inner housing 23 which is at least partially encompassed by an outer composite material overwrap 24.

Thus, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made to employ the teachings of Xu et al. in the device of Brieger in order to achieve optimum performance of the perforating gun.

Re claim 3: Brieger and Xu et al. fail to disclose the inner housing is substantially of metal.

However, Brieger disclose the inner housing 62 remains intact after firing of shaped charge (Fig. 6). It implies that the inner hosing is the rigid material.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the rigid material such as metal for the inner housing of carrier in order to achieve optimum performance of the perforating gun, since

it has been held to be within the general skill of a worker in the art to select to known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin,* 125 USPQ 416.

5. Claims 6, 9-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brieger (4756371) in view of Yang et al. (6520258).

Re claim 6: Brieger discloses a thin-walled cylinder housing 60.

Breiger fails to disclose the housing comprises a thin-walled metal cylinder.

Yang et al. disclose the metal tube 706 (Col. 10:64-65).

Hence, it would have been considered obvious to one of ordinary skill in the art, at the time the invention was made to employ the teachings of Yang et al. in the housing of Brieger's device in order to achieve optimum performance of the perforating gun.

Re claim 9: Brieger fails to disclose the composite material is a loaded polymer matrix.

Yang et al. disclose the composite material is a loaded polymer matrix (Col. 7: 34-35, 38-39). It is noted that the phrase “shock impeding material” is non-frangible.

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to employ teaching of Yang et al. in the device of Brieger in order to achieve optimum performance of the perforating gun.

Re claims 10-11: Brieger and Yang et al. fails disclose composite material including longitudinally arranged fibers in claim 10, and composite material including circumferentially arranged fibers in claim 11.

However, it is noted that the mechanical property, such as tension and compression, of composite material depends on the arrangement of fiber. The case law has held that "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation". In *re Antonie*, 559 F2d, 618, 195USPQ 6 (CCPA 1977).

Thus, the examiner takes OFFICAL NOTICE that it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the fiber arrangement longitudinally or circumferentially by routine optimization of fiber, in order to achieve optimum mechanical properties of the composite material.

Re claim 12: Brieger and Yang et al. fails disclose circumferentially arranged fibers have respective predetermined tensions.

However, it is noted that the mechanical property, such as tension and compression, of composite material depends on the arrangement of fiber. The case law has held that "a particular parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation". In *re Antonie*, 559 F2d, 618, 195USPQ 6 (CCPA 1977).

Thus, the examiner takes OFFICAL NOTICE that it would have been obvious to one of ordinary skill in the art at the time the invention was made to optimize the fiber arrangement circumferentially by routine optimization of fiber, in order to have ideal predetermined tension of the composite material.

***Response to Arguments***

6. Applicant's arguments filed 6/30/2009 have been fully considered but they are not persuasive.

Re claim 1: Applicant argues steel is not a composite material because it is an alloy, and a composite material is heterogeneous and it is not always a metal material.

However, steel/alloy can be considered composite material because it is consisting of iron and carbon, and alloy is a mixture containing metallic and nonmetallic elements (www.thefreedictionary.com/steel). The iron and carbon are the distinct components, and the metallic and nonmetallic elements are dissimilar, thus the steel is considered heterogeneous and the composite material.

Re claims 2-3: The non-frangible material does not rely on Xu et al. It relies on Brieger (i.e., fig. 6). Note that the teaching of Xu et al. is not meant be viewed alone, but it is meant to be viewed in combination with the teaching of Brieger.

Re claims 6, 9-12: The non-frangible material does not rely on Yang et al. It relies on Brieger (i.e., fig. 6). Note that the teaching of Yang et al. is not meant be viewed alone, but it is meant to be viewed in combination with the teaching of Brieger.

Re claims 10-12: Applicant asks the Examiner to provide evidence for Official Notice on “the arrangement of the composite material fibers in a longitudinal or circumferential pattern". Chapman (20030173460, i.e., Pgh. 112) discloses the arrangement of the composite material fibers in a longitudinal or circumferential pattern, and the use of fibers with predetermined tension.

***Conclusion***

**THIS ACTION IS MADE FINAL** based on the amendment. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Yong-Suk Ro whose telephone number is 571-270-5466. The examiner can normally be reached on M-F, 9hrs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer Gay can be reached on 571-272-7029. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should

you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer H Gay/
Supervisory Patent Examiner, Art Unit 3676

Yong-Suk Ro
Examiner
Art Unit 3676